TFM-9450W

USA Model
Canada Model

FM/AM TABLE RADIO

SPECIFICATIONS

Circuit: 11-transistor, 10-diode
2-band superheterodyne

Frequency Ranges:
FM 87.5 ~ 108 MHz (3.42 ~ 2.78m)
AM 530 ~ 1,605 kHz (566 ~ 187 m)

Intermediate Frequencies:
FM 10.7 MHz
AM 455 kHz

Antennas:
FM ac line antenna, ext ant terminals provided
AM built-in ferrite bar antenna

Sensitivity at 50 mW output:
FM 4.4 μV (13 dB), S/N = 30 dB
AM 89 μV/m (39 dB/m) maximum

Selectivity: 33 dB at ± 10 kHz off-resonance at 1,000 kHz

Power Output: 5W maximum

Speaker: 16 cm ($6\frac{1}{2}$") dia PM dynamic, 8 Ω

Power Requirements: 120 VAC 60 Hz, 15 W

Dimensions: 365 (w) x 220 (h) x 150 (d) mm
$14\frac{3}{8}$ (w) x $8\frac{5}{8}$ (h) x $5\frac{7}{8}$ (d) inches

Weight: 3.35 kg, 7 lb 6 oz

SONY®
SERVICE MANUAL

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Hardware Nomenclature

P – Pan Head Screw

PS – Pan Head Screw with Spring Washer

K – Flat Countersunk Head Screw

B – Binding Head Screw

RK – Oval Countersunk Head Screw

T – Truss Head Screw

R – Round Head Screw

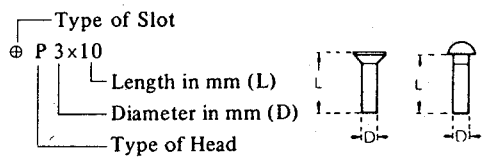
F – Flat Fillister Head Screw

SC – Set Screw

E – Retaining Ring (E Washer)

W – Washer
SW – Spring Washer
LW – Lock Washer
N – Nut

– Example –



When ordering replacement parts, use PART NUMBERS listed in Parts List or shown in EXPLODED VIEW. Parts List reference numbers should not be used.

Note: All screws in the set are Phillips type (cross recess type) unless otherwise indicated.
(–): slotted head

SECTION 1
OUTLINE

1-1. BLOCK DIAGRAM

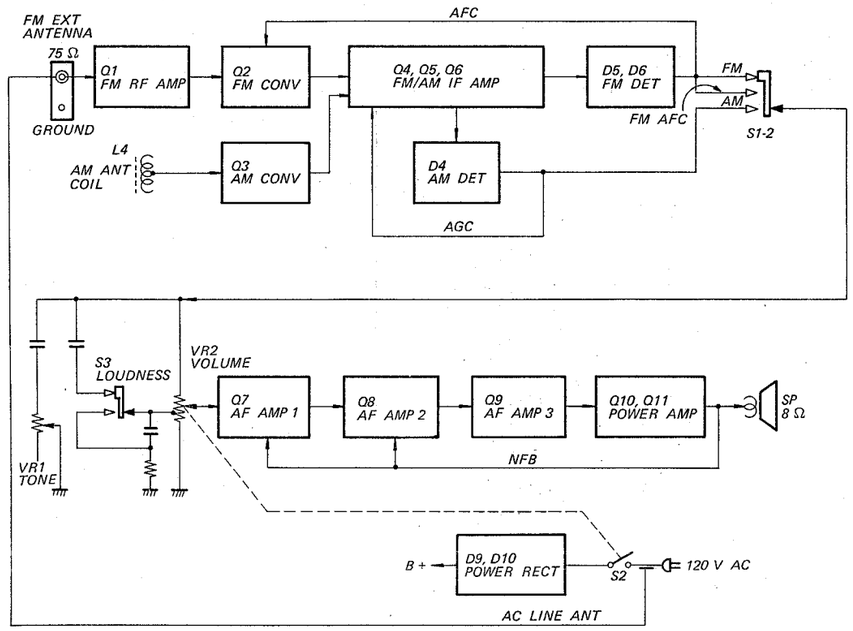


Fig. 1-1.

1-2. EXTERNAL VIEW

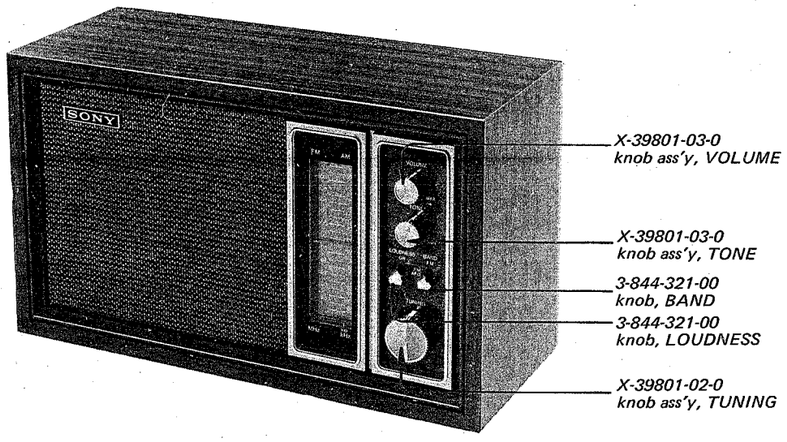


Fig. 1-2.

1-3. INTERNAL VIEW

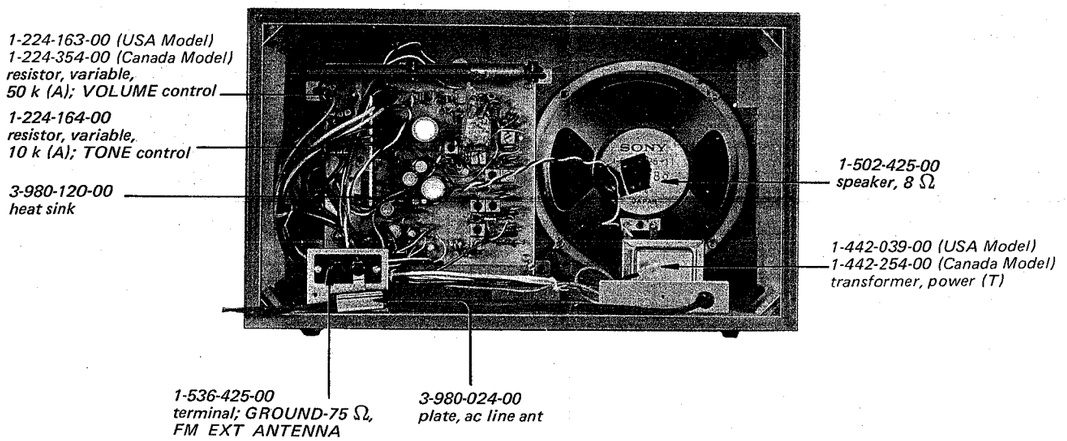


Fig. 1-3.

SECTION 2
DISASSEMBLY

2-1. REAR COVER REMOVAL

Remove rear cover in the numerical order shown in Fig. 2-1 below.

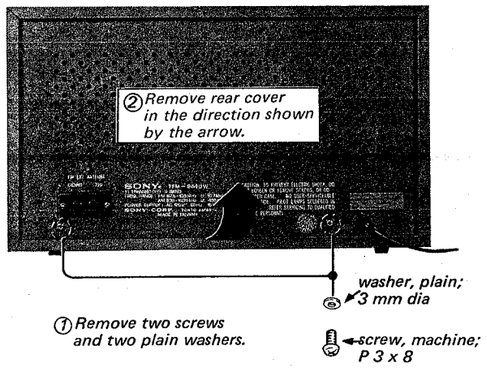

②Remove rear cover in the direction shown by the arrow.
washer, plain; 3 mm dia
①Remove two screws and two plain washers.
screw, machine; P 3 x 8

Fig. 2-1.

2-2. CHASSIS REMOVAL

Remove chassis in the numerical order shown below.

① Remove rear cover as shown in Fig. 2-1 above.

② Pull off VOLUME, TONE and TUNING knob assemblies, BAND and LOUDNESS knobs shown in Fig. 2-2 below.

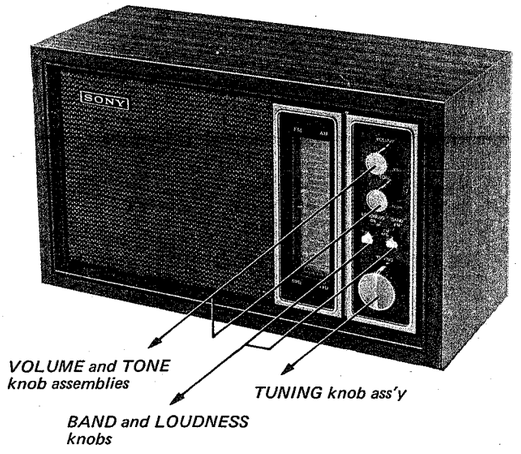


Fig. 2-2.

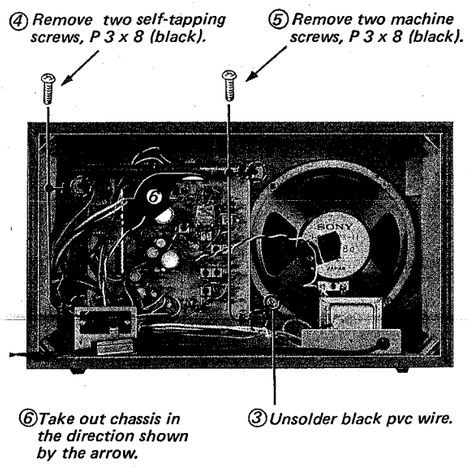

④Remove two self-tapping screws, P 3 x 8 (black).
⑤Remove two machine screws, P 3 x 8 (black).
⑥Take out chassis in the direction shown by the arrow.
③Unsolder black pvc wire.

Fig. 2-3.

2-3. DIAL SCALE REMOVAL

Remove dial scale in the numerical order shown below.

① Remove chassis as shown in 2-2 above.

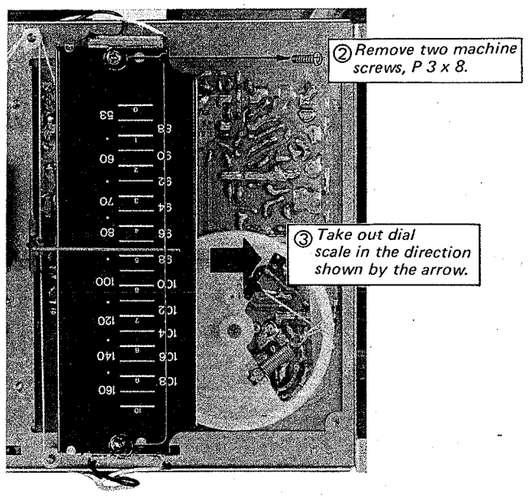


Fig. 2-4.

Note: Voltage checking and parts replacement can be performed without removing circuit board.

2-4. BAND AND LOUDNESS SWITCHES' BRACKET REMOVAL

Remove BAND and LOUDNESS switches' bracket in the numerical order shown below.

① Remove chassis as outlined in 2-2 above.

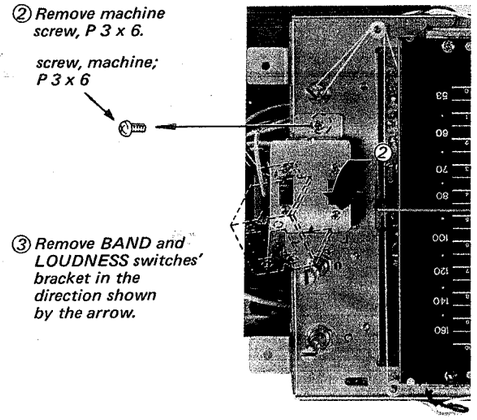

②Remove machine screw, P 3 x 6.
screw, machine; P 3 x 6
③Remove BAND and LOUDNESS switches' bracket in the direction shown by the arrow.

Fig. 2-5.

2-5. DIAL CORD STRINGING

1. Make a dial cord assembly shown in Fig. 2-6 below.

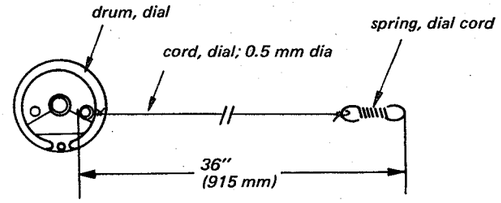


Fig. 2-6.

2. String the dial cord in the numerical order shown in Fig. 2-7 below.

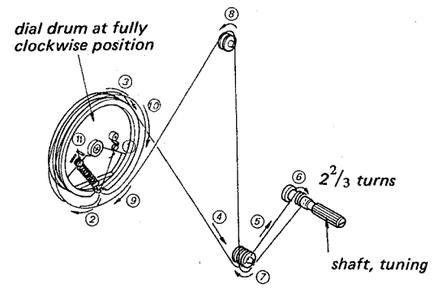


Fig. 2-7.

3. Set the tuning shaft to fully counterclockwise position.

4. Set the dial pointer ass'y on the dial cord so that the dial pointer places on the mark "0" of the logging scale, and fix the dial pointer ass'y on the dial cord with a small amount of lock paint as shown in Fig. 2-8 below.

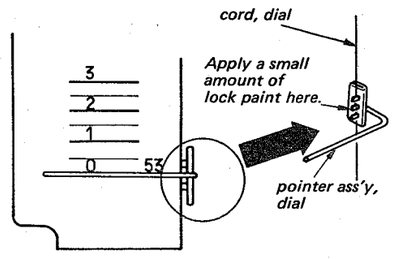


Fig. 2-8.

SECTION 3
CIRCUIT ADJUSTMENTS

3-1. TEST EQUIPMENT/TOOLS REQUIRED

* AM rf signal generator
* FM rf signal generator
* Loop antenna
* VOM
* Alignment screwdriver

Preparation:

AM rf signal generator modulation:
1 kHz, 30 %
AM rf signal generator output level:
Usable lowest possible.
FM rf signal generator modulation:
400 Hz, ± 22.5 kHz deviation
FM rf signal generator output level:
Usable lowest possible
FM rf signal generator coupling:
Direct connection to FM EXT ANTENNA terminals.
VOLUME control setting: MAX
TONE control setting: HIGH
LOUDNESS switch setting: OFF

3-2. FM I-F ALIGNMENT

Test Setup:

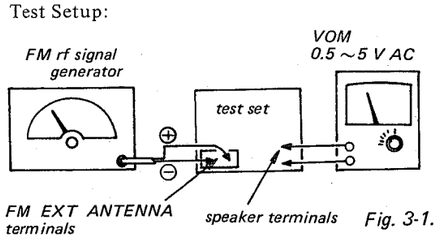


Fig. 3-1.

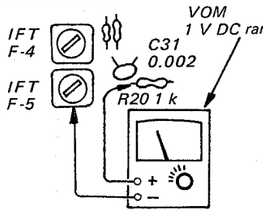


Fig. 3-2.

Step	Rf Signal Generator Frequency	Receiver Dial Setting	Adjust	Remarks
1	10.7 MHz with FM modulation	No station, no beating position	Cores of IFT F-1 IFT F-2 IFT F-3 IFT F-4 IFT F-5	Test setup: See Fig. 3-1. BAND selector: FM Adjust for maximum meter reading. Repeat adjustment two or three times.
2	No input Signal (noise only)	– ditto –	Core of IFT F-5	Test setup: See Fig. 3-2. Adjust for "0 V DC" meter reading.

3-3. FM FREQUENCY COVERAGE ADJUSTMENT

Test Setup: Same as Fig. 3-1.

Rf Signal Generator Coupling	Rf Signal Generator Frequency	Receiver Dial Setting	Adjust	Remarks
Direct connection to FM EXT ANTENNA terminals	86.5 MHz	Minimum frequency	Pitch of FM osc coil L3	BAND selector: FM Adjust for maximum meter reading. Repeat adjustment two or three times ending with TC2. Fix L3 with wax.
	110 MHz	Maximum frequency	FM osc trimmer TC2	

3-4. FM TRACKING ADJUSTMENT

Test Setup: Same as Fig. 3-1.

Rf Signal Generator Coupling	Rf Signal Generator Frequency	Receiver Dial Setting	Adjust	Remarks
Direct connection to FM EXT ANTENNA terminals	86.5 MHz	Minimum frequency	Pitch of FM rf coil L2	BAND selector: FM Adjust for maximum meter reading. Repeat adjustment two or three times ending with TC1. Fix L2 with wax.
	110 MHz	Maximum frequency	FM rf trimmer TC1	

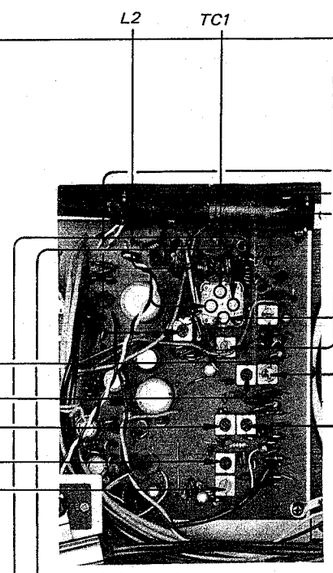


Fig. 3-4. Adjustment locations

3-5. AM I-F ALIGNMENT

Test Setup:

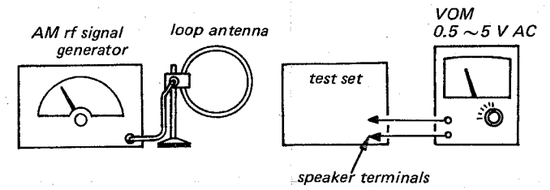


Fig. 3-3.

Rf Signal Generator Coupling	Rf Signal Generator Frequency	Receiver Dial Setting	Adjust	Remarks
Loop antenna See Fig. 3-3.	455 kHz	No station, no beating position	Cores of IFT A-1 IFT A-2 IFT A-3	BAND selector: AM Adjust for maximum meter reading. Repeat adjustment two or three times.

3-6. AM FREQUENCY COVERAGE ADJUSTMENT

Test Setup:

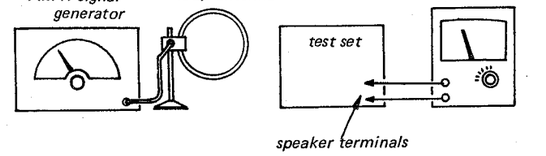


Fig. 3-4.

Rf Signal Generator Coupling	Rf Signal Generator Frequency	Receiver Dial Setting	Adjust	Remarks
Loop antenna See Fig. 3-4.	520 kHz	Minimum frequency	Core of AM osc coil L6	BAND selector: AM Adjust for maximum meter reading. Repeat adjustment two or three times ending with TC4.
	1,680 kHz	Maximum frequency	AM osc trimmer TC4	

3-7. AM TRACKING ADJUSTMENT

Test Setup:

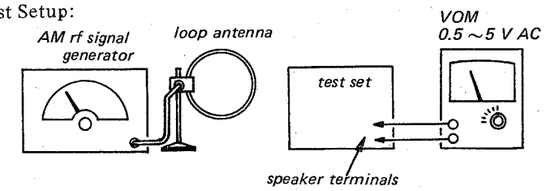


Fig. 3-5.

Rf Signal Generator Coupling	Rf Signal Generator Frequency	Receiver Dial Setting	Adjust	Remarks
Loop antenna See Fig. 3-5.	620 kHz	Tune in 620 kHz signal	Position of AM ant coil L4	BAND selector: AM Adjust for maximum meter reading. Repeat adjustment two or three times ending with TC3. Fix L4 with wax.
	1,400 kHz	Tune in 1,400 kHz signal	AM ant trimmer TC3	

SECTION 4
SCHEMATIC AND MOUNTING DIAGRAMS

4-1. SCHEMATIC DIAGRAM

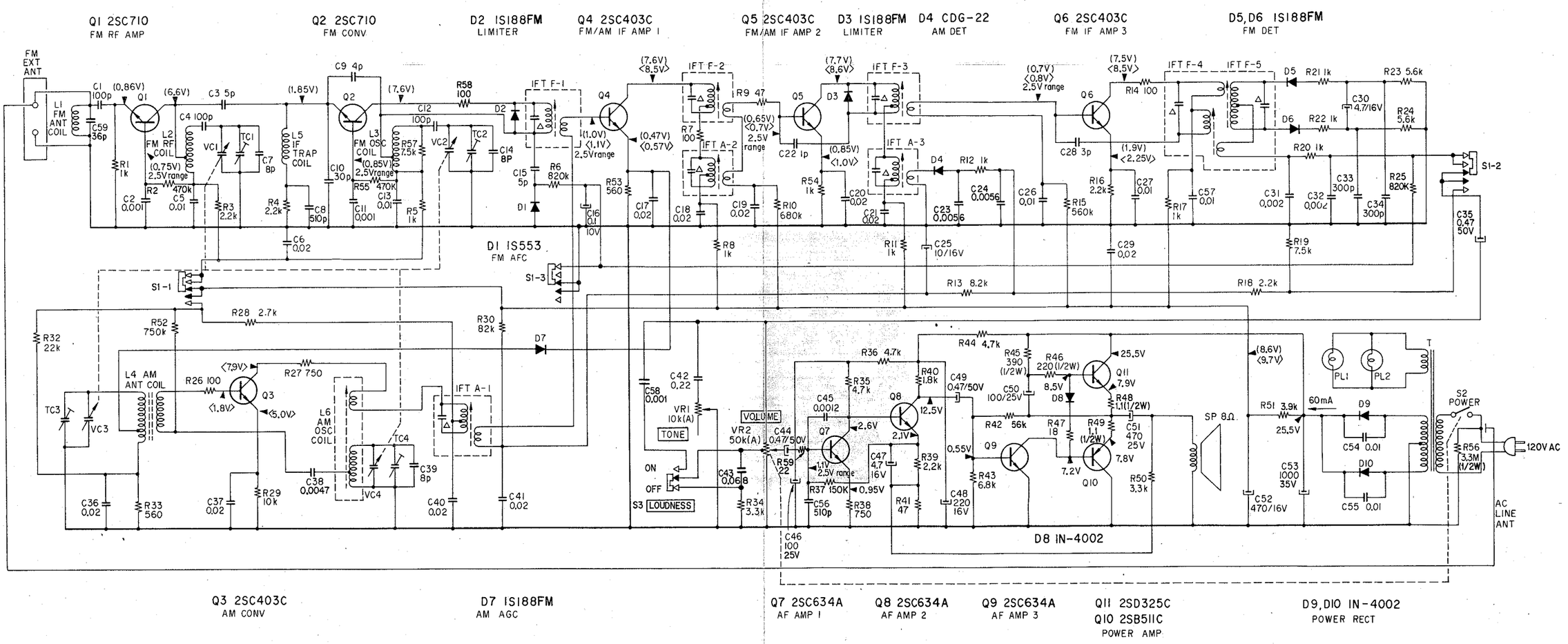


Fig. 4-1.

Note:

1. All fixed resistors are in Ω, ± 5 %, ¼ W.
2. All fixed capacitors are in μF unless otherwise specified.
3. Voltage readings are taken with a 20 kΩ/V DC VOM with reference to heavy lines. Those shown in ( ) indicate readings on FM, in < > on AM, others are common.
4. Capacitors marked with △ are built in i-f transformers.

4-2. MOUNTING DIAGRAM

– Conductor Side –

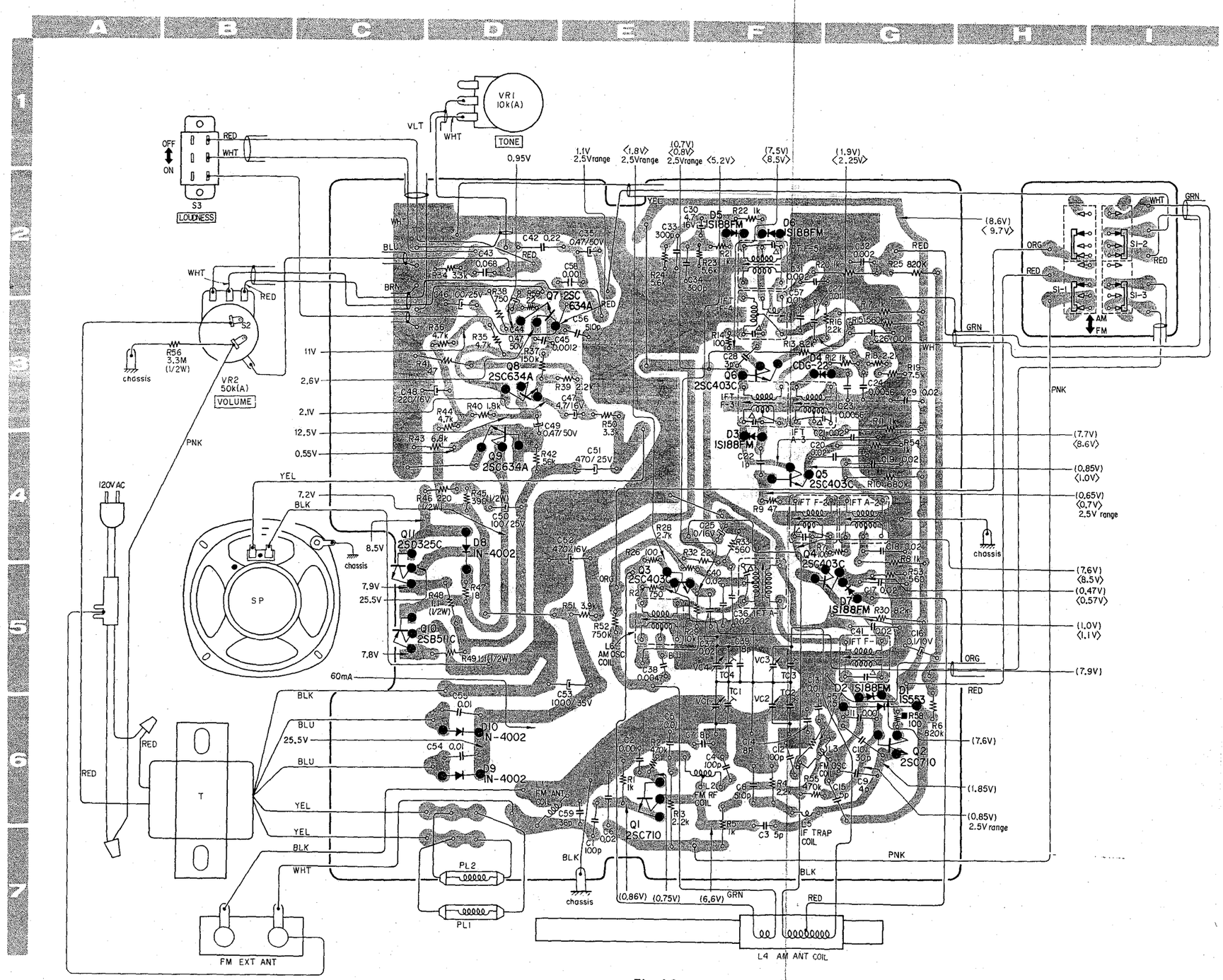
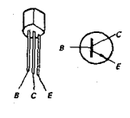


Fig. 4-2.

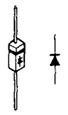
Transistor Location

Q1:	6E	Q7:	3D
Q2:	6G	Q8:	3D
Q3:	5E	Q9:	3D
Q4:	5G	Q10:	5C
Q5:	4F	Q11:	4C
Q6:	3F		

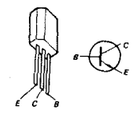
Q1, Q2: 2SC710



D1: 1S553

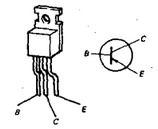


Q3-Q6: 2SC403C
Q7-Q9: 2SC634A

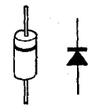


D2-D7: 1S188

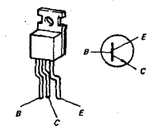
Q10: 2SB511C



D8-D10: 1N-4002



Q11: 2SD325C



Note: R58 marked with ■ is mounted on the conductor side.

SECTION 5
EXPLODED VIEW AND PACKING

5-1. EXPLODED VIEW

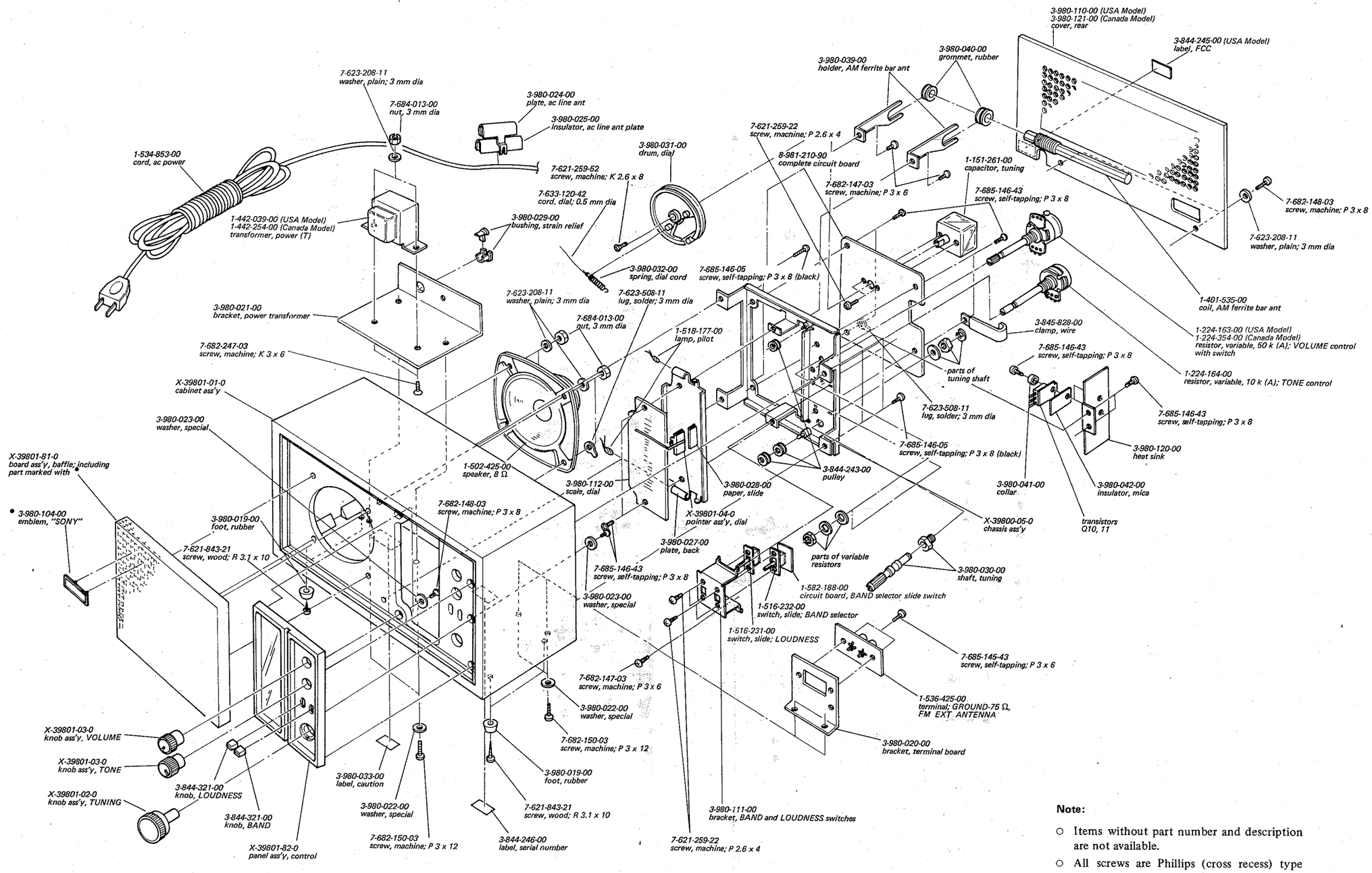


Fig. 5-1.

Note:

- ○ Items without part number and description are not available.
- ○ All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head

5-2. PACKING

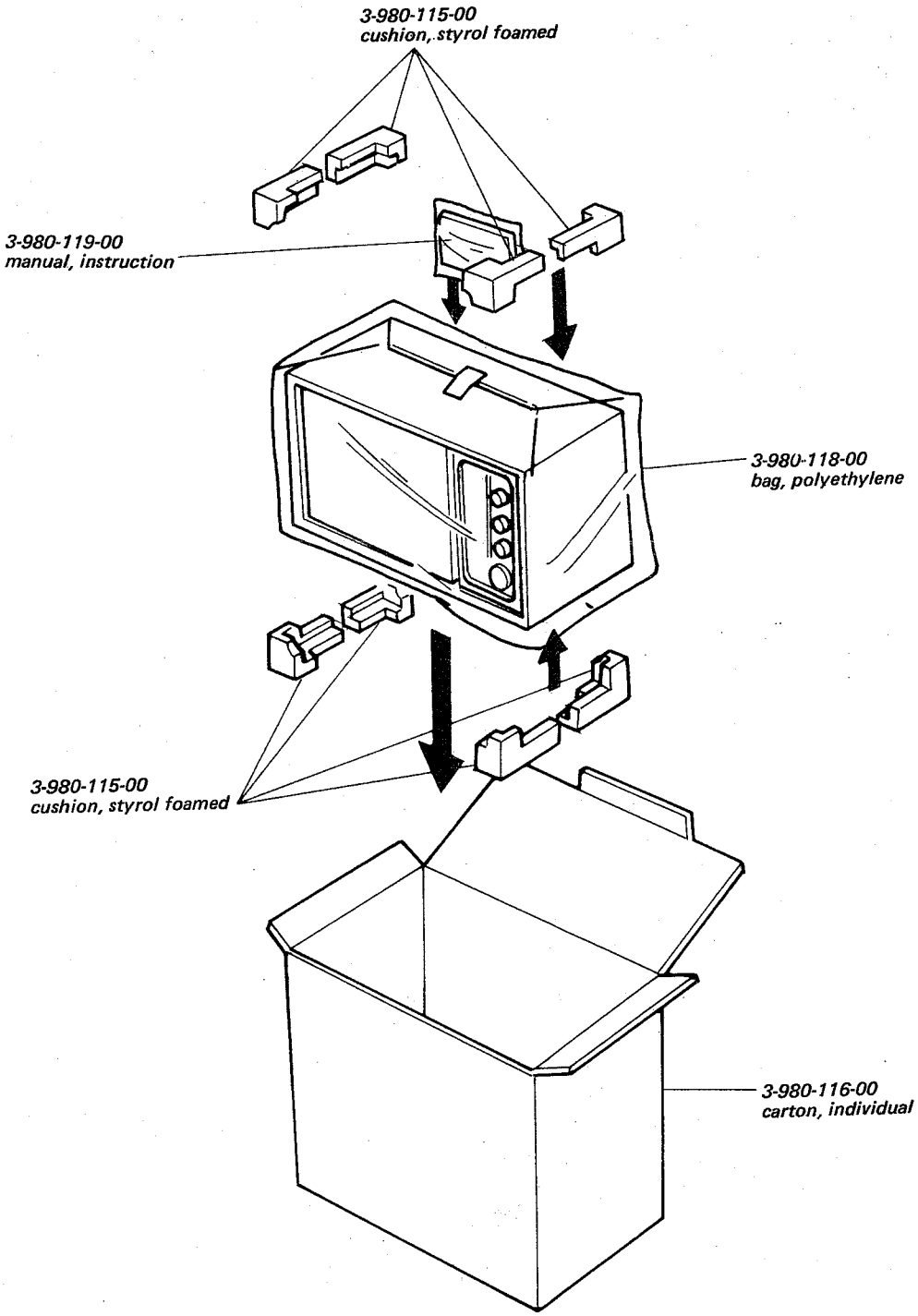


Fig. 5-2.

Note:

○ Items without part number and description are not available.

SECTION 6
ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description	
	COMPLETE CIRCUIT BOARD		
	8-981-210-90	complete circuit board	
	SEMICONDUCTORS		
Q1		transistor	2SC710
Q2		transistor	2SC710
Q3		transistor	2SC403C
Q4		transistor	2SC403C
Q5		transistor	2SC403C
Q6		transistor	2SC403C
Q7		transistor	2SC634A
Q8		transistor	2SC634A
Q9		transistor	2SC634A
Q10		transistor	2SB511C
Q11		transistor	2SD325C
D1		diode	1S553
D2		diode	1S188FM
D3		diode	1S188FM
D4		diode	CDG-22
D5		diode	1S188FM
D6		diode	1S188FM
D7		diode	1S188FM
D8		diode	1N-4002
D9		diode	1N-4002
D10		diode	1N-4002
	COILS AND TRANSFORMERS		
IFT A-1	1-403-876-00	transformer, AM i-f	
IFT A-2	1-403-875-00	transformer, AM i-f	
IFT A-3	1-403-874-00	transformer, AM i-f	
IFT F-1	1-403-887-00	transformer, FM i-f	
IFT F-2	1-403-886-00	transformer, FM i-f	
IFT F-3	1-403-886-00	transformer, FM i-f	
IFT F-4	1-403-885-00	transformer, FM i-f	
IFT F-5	1-403-884-00	transformer, FM i-f	
L1	1-405-530-00	coil, FM ant	
L2	1-405-590-00	coil, FM rf	
L3	1-405-592-00	coil, FM osc	
L4	1-401-535-00	coil, AM ferrite bar ant	
L5	1-405-544-00	coil, i-f trap	
L6	1-405-529-00	coil, AM osc	
T	1-442-039-00	transformer, power (USA Model)	
	1-442-254-00	transformer, power (Canada Model)	
	CAPACITORS		

All fixed capacitors are in μF and ceramic type unless otherwise specified. p = μμ.

Ref. No.	Part No.			Description
C1	1-101-963-11	100 p		
C2	1-101-918-11	0.001		
C3	1-101-955-11	5 p		
C4	1-101-963-11	100 p		
C5	1-101-923-11	0.01		
C6	1-101-924-11	0.02		
C7	1-101-958-11	8 p		
C8	1-101-421-11	510 p		
C9	1-101-954-11	4 p		
C10	1-101-900-11	30 p		
C11	1-101-918-11	0.001		
C12	1-101-963-11	100 p		
C13	1-101-923-11	0.01		
C14	1-101-958-11	8 p		
C15	1-101-955-11	5 p		
C16	1-127-019-11	0.1	10 V	solid aluminum
C17	1-101-924-11	0.02		
C18	1-101-924-11	0.02		
C19	1-101-924-11	0.02		
C20	1-101-924-11	0.02		
C21	1-101-924-11	0.02		
C22	1-101-951-11	1 pF		
C23	1-105-670-12	0.0056		mylar
C24	1-105-670-12	0.0056		mylar
C25	1-121-471-11	10	16 V	electrolytic
C26	1-101-923-11	0.01		
C27	1-101-923-11	0.01		
C28	1-101-953-11	3 p		
C29	1-101-924-11	0.02		
C30	1-121-394-11	4.7	16 V	electrolytic
C31	1-101-919-11	0.002		
C32	1-101-919-11	0.002		
C33	1-101-398-11	300 p		
C34	1-101-398-11	300 p		
C35	1-121-726-11	0.47	50 V	electrolytic
C36	1-101-924-11	0.02		
C37	1-101-924-11	0.02		
C38	1-105-829-12	0.0047		mylar
C39	1-101-958-11	8 p		
C40	1-101-924-11	0.02		
C41	1-101-924-11	0.02		
C42	1-105-849-12	0.22		mylar
C43	1-105-843-12	0.068		mylar
C44	1-121-726-11	0.47	50 V	electrolytic
C45	1-105-662-12	0.0012		mylar
C46	1-121-377-11	100	25 V	electrolytic
C47	1-121-394-11	4.7	16 V	electrolytic
C48	1-121-421-11	220	16 V	electrolytic
C49	1-121-726-11	0.47	50 V	electrolytic
C50	1-121-377-11	100	25 V	electrolytic
C51	1-121-733-11	470	25 V	electrolytic
C52	1-121-426-11	470	16 V	electrolytic
C53	1-121-388-11	1,000	35 V	electrolytic

Ref. No.	Part No.	Description	
C54	1-102-317-11	0.01	
C55	1-102-317-11	0.01	
C56	1-101-421-11	510 p	
C57	1-101-923-11	0.01	
C58	1-105-821-12	0.001	mylar
C59	1-101-875-11	36 p	
TC1-TC4 VC1-VC4	1-151-261-00	tuning	

RESISTORS

All fixed resistors are in Ω, ± 5 %, ¼ W carbon film type.
k = 1,000, M = 1,000,000.

R1	1-242-673-11	1 k		
R2	1-242-737-11	470 k		
R3	1-244-681-11	2.2 k		
R4	1-242-681-11	2.2 k		
R5	1-242-673-11	1 k		
R6	1-242-743-11	820 k		
R7	1-242-649-11	100		
R8	1-244-673-11	1 k		
R9*	1-242-641-11	47		
R10	1-244-741-11	680 k		
R11	1-244-673-11	1 k		
R12	1-242-673-11	1 k		
R13	1-244-695-11	8.2 k		
R14	1-242-649-11	100		
R15	1-244-739-11	560 k		
R16	1-242-681-11	2.2 k		
R17	1-244-673-11	1 k		
R18	1-242-681-11	2.2 k		
R19	1-242-694-11	7.5 k		
R20	1-244-673-11	1 k		
R21	1-242-673-11	1 k		
R22	1-242-673-11	1 k		
R23	1-242-691-11	5.6 k		
R24	1-242-691-11	5.6 k		
R25	1-242-743-11	820 k		
R26	1-242-649-11	100		
R27	1-242-670-11	750		
R28	1-242-683-11	2.7 k		
R29	1-242-697-11	10 k		
R30	1-244-719-11	82 k		
R31		----------		
R32	1-242-705-11	22 k		
R33	1-242-667-11	560		
R34	1-242-685-11	3.3 k		
R35	1-242-689-11	4.7 k		
R36	1-242-689-11	4.7 k		
R37	1-242-725-11	150 k		
R38	1-242-670-11	750		
R39	1-242-681-11	2.2 k		
R40	1-242-679-11	1.8 k		
R41	1-244-641-11	47		
R42	1-242-715-11	56 k		
R43	1-242-693-11	6.8 k		
R44	1-242-689-11	4.7 k		
R45	1-244-863-11	390	½ W	
R46	1-244-857-11	220	½ W	
R47	1-242-631-11	18		
R48	1-244-802-11	1.1	½ W	
R49	1-244-802-11	1.1	½ W	
R50	1-242-685-11	3.3 k		
R51	1-242-687-11	3.9 k		
R52	1-242-742-11	750 k		
R53	1-242-667-11	560		
R54	1-242-673-11	1 k		
R55	1-242-737-11	470 k		
R56	1-202-657-11	3.3 M	½ W	composition
R57	1-242-694-11	7.5 k		
R58	1-242-649-11	100		
R59	1-242-633-11	22		
VR1	1-224-164-00	variable, 10 k (A); TONE control		
VR2	1-224-163-00	variable, 50 k (A); VOLUME control with switch (USA Model)		
	1-224-354-00	variable, 50 k (A); VOLUME control with switch (Canada Model)		

MISCELLANEOUS

PL1	1-518-177-00	lamp, pilot
PL2	1-518-177-00	lamp, pilot
SP	1-502-425-00	speaker, 8 Ω
S1	1-516-232-00	switch, slide; BAND selector
S3	1-516-231-00	switch, slide; LOUDNESS
	1-534-853-00	cord, ac power
	1-536-425-00	terminal; GROUND-75 Ω, FM EXT ANTENNA
	1-582-188-00	circuit board, band selector slide switch